PATENT
ATTORNEY DOCKET NO.: LEAPS-C6
CUSTOMER NO: 36038

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:
M. Seul

Serial No. 09/688,574

Filed: 10/17/2000

For: Light-Controlled Electrokinetic Assembly of Particles Near Surfaces

Group Art Unit: 1753

Examiner: K. Mayekar

I hereby certify that, on the date indicated below, this correspondence was sent by fax to the Commissioner for Patents, at (703) 872-9306.

By: _____

Date:

Commissioner for Patents
PO Box 1450
Alexandria VA 22313-1450

OK to enter
5/10/2005

5/10/2005

Revised Amendment After Allowance ~~(Third one sent)~~

Dear Sir:

Pursuant to a conversation with the Examiner, Applicant requests amendments to the specification and drawings as follows:

Specification Amendment

Page 13, amend the second to last paragraph as follows:

The fundamental two-terminal operation is translocation (Fig. 1c), or the controlled transport of a set of particles from location O to location F on the surface; here, O and F are target areas to which the above-described one-terminal operations may be applied. The one-dimensional, lateral bead transport used in translocation is achieved by imposing a lateral current along a conduit connecting areas O and F, as shown in Figs. 3a and ~~3b~~ 3e or by projecting a corresponding linear pattern of illumination. In this channeling operation, beads move in the direction of lower impedance in the direction of the arrow shown in Figs. 3a and ~~3b~~ 3e, in accordance with the underlying electrokinetic flow.

Page 14, amend the first full paragraph as follows:

Oxide patterning may be utilized in two ways to create a lateral current along the Si/SiOx interface. The simplest method is depicted in Fig. 3c and shows a large open holding area 32 fed by three narrow conduits 34 defined by etching a thermal oxide. Beads move to the holding area 32 along the narrow conduits 34 to form a bead array. Fig. 3d is a large scale view of the array of Fig. 3c. The principle invoked in creating transport is that of changing the aspect ratio (narrow conduit connected to wide holding area) of the embedded pattern with constant values of thin oxide thickness inside and thick oxide outside, as illustrated in Fig. 3e. In Figs. 3c and 3d, the applied voltage was 10V (pp) at 10kHz. An alternative approach for creating bead transport, enabled by UV-mediated oxide regrowth, is to vary the oxide thickness along the conduit in a controlled fashion. This is readily accomplished by UV exposure through a graduated filter. Differences in the oxide thickness between O and F of as little as 5-10 Angstroms suffice to effect lateral transport. In this situation, the aspect ratio of the conduit and the holding areas need not be altered. This is illustrated in Fig. ~~3b~~ 3e.

Page 10, insert at line 22, after the paragraph that ends with "conduit;" the following:

Figs. 3e and 3f are illustrations of the oxide profiles of a different Si/SiOx electrode from that shown in Figs. 3a and 3b;

Drawing Amendments:

Please insert the following replacement sheet

Respectfully Submitted,

Dated:

By:

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The Commissioner is hereby authorized to charge any fees due in connection with this submission and not otherwise covered by payment included herewith, or to credit any overpayment, to Deposit Account No. 502088.

Replacement Sheet

FIG. 3a

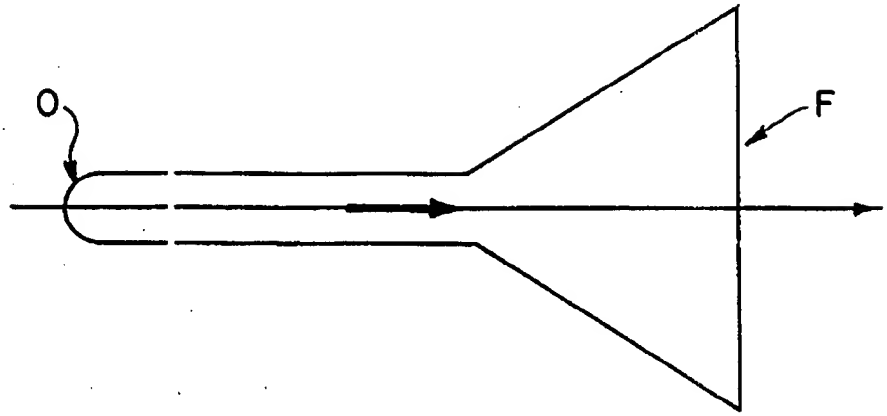

FIG. 3b

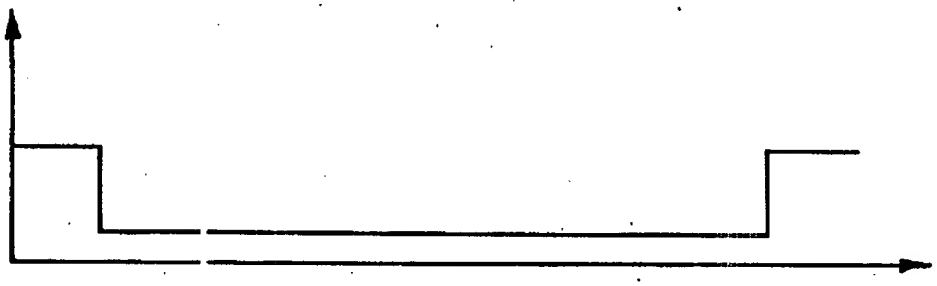

FIG. 3e

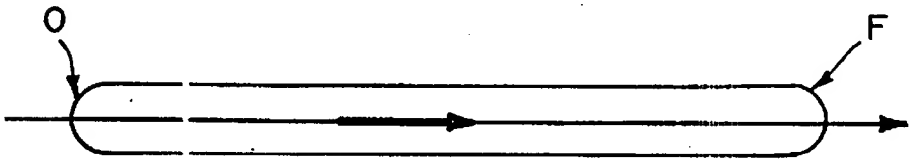

FIG. 3f